Paper No. 28

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM R. CLARK and DAVID S. LAFLEUR

Appeal No. 2004-0546
Application No. 09/411,793

ON BRIEF

Before KIMLIN, OWENS and TIMM, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1, 3-11, 14-18, 21, 22, 24, 29 and 36-40. Claims 12, 27, 33, 35 and 41, the other claims remaining in the present application, stand withdrawn from consideration. Claim 1 is illustrative:

1. A fluid flow control valve assembly comprising:

   A. a rotatable valve member disposed across a cross section of a passageway having a fluid flow throughput that varies as a nonlinear function of a valve member angle about a valve shaft axis, which is transverse to the fluid flow, the valve member being rotatable about said

valve shaft axis between a range of open positions and a closed position;

B. a motive source configured to generate a valve input signal as a function of an applied control signal, wherein said control signal is representative of a selected throughput *T* of fluid flow through said passageway;

C. a linearizing mechanism having:

1) a rack coupled to said motive source and configured to experience a linear displacement in response to said valve input signal;

2) a valve shaft interface in operative communication with said rack, wherein said linear displacement of said rack effects a rotation of said valve shaft to position said valve member as a function of said valve input signal such that the throughput of fluid flow through said passageway is, for at least a portion of said open positions, a linear function of said selected throughput *T*; and

D. a valve member position sensor configured to sense said linear displacement of said rack and, in response thereto, to determine and generate an output signal representative of the valve member position.

The examiner relies upon the following references as evidence of obviousness:

Ewing et al. (Ewing)	4,327,894	May 4, 1982
Kawai	4,926,903	May 22, 1990

Appellants' claimed invention is directed to a fluid flow control valve comprising a rotatable valve member having a shaft in operative communication with a rack coupled to a motive source. Linear displacement of the rack effects rotation of the valve

shaft for positioning the valve member. In addition, the assembly comprises a valve member position sensor, such as a rotary potentiometer, which senses the linear displacement of the rack and generates an output signal representative of the valve member position.

Appealed claims 1, 3-11, 14-18, 21, 22, 24, 29 and 36-40 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ewing in view of Kawai.

Also, claims 39 and 40 stand rejected under 35 U.S.C. § 112, second paragraph.

Appellants submit that with respect to the § 103 rejection, "the claims may be grouped" (page 5 of Brief). Appellants further submit that "[g]iven this grouping, arguments are provided herein with respect to only independent claim 1" (page 6 of Brief, second paragraph). Accordingly, with respect to the § 103 rejection, all the appealed claims stand or fall together with claim 1, and we will limit our consideration to the examiner's rejection of claim 1.

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of

§ 103 in view of the applied prior art. Accordingly, we will sustain the examiner's § 103 rejection for essentially those reasons expressed in the Answer. We will also sustain the examiner's rejection under 35 U.S.C. § 112, second paragraph.

Appellants do not present a substantive argument against the examiner's § 112 rejection. Rather, appellants submitted an amendment after final rejection to obviate the examiner's rejection. However, the examiner did not enter appellants' amendment. Consequently, the examiner's § 112 rejection of claims 39 and 40 remains of record and has not been rebutted by appellants. Accordingly, we will, per force, sustain the rejection.

We now turn to the examiner's § 103 rejection of all the appealed claims. There is no dispute that Ewing, sharing a common assignee with appellants, discloses the features of the claimed control valve assembly with the exception of the valve member position sensor which senses the linear displacement of the rack and generates an output signal representative of the position of the valve member (paragraph (D) of claim 1). However, as explained by the examiner, Kawai evidences that such valve member position sensors, such as appellants' rotary potentiometer, were known in the art for determining and

generating an output signal that is representative of the position of the valve member. Since Ewing discloses the use of the linear movement of a rack to effect rotary movement of a valve shaft, we concur with the examiner's reasoning that it would have been obvious for one of ordinary skill in the art to also utilize the linear movement of Ewing's rack to effect the rotary movement of a potentiometer to determine and generate an output signal that is representative of the position of the valve member. In our view, one of ordinary skill in the art, cognizant of the known proportional relationship between the linear displacement of Ewing's rack and the rotary movement of Ewing's valve shaft, would have found it obvious to utilize a similar proportional relationship between the linear displacement of Ewing's rack and the rotary movement of a rotary potentiometer. We do not agree with appellants' assessment that one of ordinary skill in the art, upon combining Ewing and Kawai, would have been limited to using the rotary movement of the valve shaft to drive the rotary potentiometer. Rather, we are satisfied that one of ordinary skill in the art would have found it obvious, as an alternative to coupling the potentiometer directly to the valve shaft, to indirectly couple the rotary potentiometer to the movement of the valve shaft via the linear displacement of the

rack disclosed by Ewing. Manifestly, the concept underpinning the claimed invention, employing the linear displacement of a rack to impart rotary motion, was well-known in the mechanical arts, as evidenced by Ewing. We see nothing unobvious in appellants' selection of a rotary potentiometer as the recipient of the linear displacement of a rack, particularly since it was known in the art to use a rotary potentiometer to determine the position of a rotary valve member. Appellants have apprised us of no rationale why it would have been unobvious for one of ordinary skill in the art to modify Ewing by coupling a rotary potentiometer to the rack as presently claimed.

Appellants maintain that "the Examiner gave no reason why one having ordinary skill in the art would modify Kawai to include a linearizing mechanism" (page 9 of Brief, second paragraph). However, the issue on appeal framed by the examiner's rejection is not modifying Kawai to include a linearizing mechanism, but modifying Ewing to include a rotary potentiometer of the type disclosed by Kawai. Likewise, appellants' argument that "[t]here is no suggestion in Kawai with respect to using linear measurements to determine angular (or rotational) valve position" misses the thrust of the examiner's rejection (page 10 of Brief, second paragraph). The requisite suggestion of using linear displacement

to effect rotary displacement of the type present in a rotary potentiometer emanates from Ewing.

As a final point, we note that appellants base no argument upon objective evidence of nonobviousness, such as unexpected results.

In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

EDWARD C. KIMLIN Administrative Patent Judge	)
TERRY J. OWENS Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
CATHERINE TIMM Administrative Patent Judge	)

ECK:clm

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